

Application No. 09/689,010
Amendment dated March 28, 2005
Reply to Office Action of December 28, 2004

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1. (Currently Amended) A microchip comprising:
a channel having at least one internal surface, wherein an object to be analyzed is capable of traveling through said channel; and
an optical element facing said channel to receive a light from said object, said optical element having a surface forming a part of said at least one internal surface of said channel,
said microchip further comprising, as deflecting elements for approximating said object in said channel to said optical element:
a first electrode provided to face said channel at a vicinity of said optical element; and
a second electrode provided to face said channel in a position to said first electrode at an upstream side of said optical element with respect to a traveling direction of said object,
wherein said object is capable of being approximated to said optical element by applying a predetermined electric field between said first and second electrodes.

2. (Currently Amended) A microchip as claimed in claim 1,
wherein at least a portion of said at least one internal surface of said channel is defined by a groove formed on a first surface of a substrate;
wherein said substrate has a second surface opposed to said first surface, and has a through hole connecting a bottom of said groove and said second surface,
and
wherein said optical element is provided in said through hole.

3. (Original) A microchip as claimed in claim 2, wherein said through hole has a tapered shape.
4. (Original) A microchip as claimed in claim 2, further comprising:
a cover plate provided on said first surface of said substrate, said cover plate covering at least a portion of said groove.
5. (Original) A microchip as claimed in claim 1, wherein said optical element comprises a condenser lens.
- 6-7. (Cancelled)
8. (Original) A microchip as claimed in claim 1, further comprising:
a light guide for guiding a light from an external light source to a prescribed area of said channel,
wherein said optical element is provided at said prescribed area.
9. (Withdrawn) A microchip comprising:
a channel extending in an extending direction, wherein an object to be analyzed is capable of traveling through said channel; and
deflecting electrodes for deflecting said object in a direction traverse to said extending direction at a vicinity of an analyzing position by being applied with electrical signals thereto.
10. (Withdrawn) A microchip as claimed in claim 9, further comprising:
terminals electrically connected with said deflecting electrodes, respectively,
wherein said terminals are for electrically connecting said deflecting electrodes with an external controller that generates said electrical signals.

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11. (Withdrawn) A microchip as claimed in claim 9,
wherein said object is capable of traveling through said channel in a traveling direction, and
wherein one of said deflecting electrodes is provided at an upstream side of said analyzing position with respect to said traveling direction.
12. (Withdrawn) A microchip as claimed in claim 9, further comprising:
an optical element facing said channel at said analyzing position, said optical element being for receiving a light from said object.
13. (Withdrawn) A manipulating needle for manipulating an object, said needle comprising:
an edge portion having a diameter not larger than 50 μm , wherein a material having a capability of a biochemical bond with said object or a capability of a biotic bond with said object is adhered to said edge portion.
14. (Withdrawn) A manipulating needle as claimed in claim 13, wherein said diameter is in a range from 1 μm to 50 μm .
15. (Withdrawn) A manipulator for manipulating an object under a control from an external manipulating apparatus, said manipulator comprising:
an edge portion to which a material having a capability of a biochemical bond with said object or a capability of a biotic bond with said object is adhered; and
an attachment portion for being detachably attached with said external manipulating apparatus.
16. (Withdrawn) A manipulator as claimed in claim 15, wherein said attachment portion is made of a magnetic material.
17. (Withdrawn) An analyzing apparatus comprising:

a holder for detachably holding an analyzing microchip, said analyzing microchip comprising a channel having at least one internal surface, wherein an object to be analyzed is capable of traveling through said channel; and

a sensor unit, provided in said holder, for receiving a light from an analyzing position of said channel thereby a light from said object is detected by said sensor when said object travels said analyzing position.

18. (Withdrawn) An analyzing apparatus as claimed in claim 17, further comprising a light source for projecting a light to said analyzing position.

19. (Withdrawn) An analyzing apparatus as claimed in claim 17, wherein said sensor unit comprising:

a condenser lens for condensing said light from said analyzing position; and
a photo-diode for sensing said condensed light.

20. (Withdrawn) An analyzing apparatus as claimed in claim 17, wherein said holder having a hollowed portion in which said microchip is to be located.

21. (Withdrawn) An analyzing apparatus comprising:

a holder for detachably holding a microchip, said microchip comprising:

a channel extending in an extending direction, wherein an object to be analyzed is capable of traveling through said channel; and

deflecting electrodes at least one of which is provided at a vicinity of an analyzing position; and

a controller, provided in said holder, for applying electrical signals to said deflecting electrodes,

wherein said deflecting electrodes deflects said object in a direction traverse to said extending direction at said analyzing position when said controller applies said electrical signals to said deflection electrodes.

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22. (Withdrawn) An analyzing apparatus as claimed in claim 21, wherein said holder having a hollowed portion in which said microchip is to be located.
23. (Withdrawn) An analyzing apparatus as claimed in claim 21, further comprising terminals, provided on said holder, for electrically connecting said controller and said deflecting electrodes.
24. (Withdrawn) An analyzing apparatus comprising:
a holder for detachably holding an analyzing microchip, said analyzing microchip comprising a channel having at least one internal surface, wherein an object to be analyzed is capable of traveling through said channel; and
a lifting unit, provided in said holder, for lifting said analyzing microchip.
25. (Withdrawn) An analyzing apparatus as claimed in claim 24,
wherein said holder having a hollowed portion in which said microchip is to be located, and
wherein said lifting unit is provided under said hollowing portion.
26. (Withdrawn) An analyzing apparatus as claimed in claim 24, further comprising:
a controller, electrically connected with said lifting unit, for controlling said lifting unit.
27. (Withdrawn) A method of picking up an object traveling in a traveling direction through a channel formed in an analyzing microchip, said method comprising:
sensing said object at an analyzing position of said channel;
moving, in response to said sensing of said object, a manipulator into a pick up position of said channel that is downstream side of said analyzing position with respect to said traveling direction, wherein at least a part of said manipulator is made of a

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material having a characteristic of a biochemical bond capability with said object or a biotic bond capability with said object; and

retrieving said object by said manipulator by using said characteristic of said material.

28. (Withdrawn) A method as claimed in claim 27, further comprising:
scanning said manipulator at said pick up position while said retrieving step is executed.

29. (Withdrawn) A method as claimed in claim 28, wherein said manipulator is scanned in a direction traverse to said traveling direction.